

t21_altcat_4

(TMbFdn75ZhBSsqnq9A483JkwwGvvDt1P7x2)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_altcat_1 : \iota \Rightarrow o$ be given. Let $v11_altcat_1 : \iota \Rightarrow o$ be given. Let $v12_altcat_1 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $v15_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k6_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $l1_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v10_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v13_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& \quad X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\
& \quad \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\
& \quad X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow (\forall X2.((v15_functor0 X2 X0 X1) \wedge \\
& \quad (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& \quad X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5. \\
& \quad (m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v3_altcat_3 X5 X0 X3 X4) \Rightarrow \\
& \quad ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 X0 X4 X3 = k1_xboole_0) \vee \\
& \quad (v3_altcat_3 (k6_functor0 X0 X1 X2 X3 X4 X5) X1 (k3_functor0 X0 X1 \\
& \quad X2 X3) (k3_functor0 X0 X1 X2 X4))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& \quad ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& \quad ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& \quad X2 X0 X1) \Rightarrow (l2_functor0 X2 X0 X1))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((l1_altcat_1 X0) \wedge (l1_altcat_1 X1)) \Rightarrow (\\
& \quad \forall X2. (l2_functor0 X2 X0 X1) \Rightarrow (l1_functor0 X2 X0 X1))
\end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \wedge (((\neg v2_struct_0 X1) \wedge \\ & (l1_altcat_1 X1)) \wedge (((v10_functor0 X2 X0 X1) \wedge (l2_functor0 X2 X0 \\ & X1)) \wedge ((m1_subset_1 X3 (u1_struct_0 X0)) \wedge ((m1_subset_1 X4 (u1_struct_0 \\ & X0)) \wedge (m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)))))) \Rightarrow (m1_subset_1 \\ & (k6_functor0 X0 X1 X2 X3 X4 X5) (k1_altcat_1 X1 (k3_functor0 X0 X1 \\ & X2 X3) (k3_functor0 X0 X1 X2 X4))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0) \wedge (l1_altcat_1 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \wedge \\ & ((l1_functor0 X2 X0 X1) \wedge (m1_subset_1 X3 (u1_struct_0 X0)))) \Rightarrow \\ & (m1_subset_1 (k3_functor0 X0 X1 X2 X3) (u1_struct_0 X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ & X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow ((r2_altcat_3 X0 X1 X2) \Leftrightarrow ((k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge \\ & ((k1_altcat_1 X0 X2 X1 \neq k1_xboole_0) \wedge (\exists X3.(m1_subset_1 \\ & X3 (k1_altcat_1 X0 X1 X2)) \wedge (v3_altcat_3 X3 X0 X1 X2)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \Rightarrow (\forall X2.((v10_functor0 \\ & X2 X0 X1) \wedge (l2_functor0 X2 X0 X1)) \Rightarrow ((v8_functor0 X2 X0 X1) \Leftrightarrow (\forall X3. \\ & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\ & (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 X0 X3 X4 \neq k1_xboole_0) \wedge (k1_altcat_1 \\ & X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 X0 X1 X2 X4) = k1_xboole_0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\ & ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\ & ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\ & X2 X0 X1) \Rightarrow ((v15_functor0 X2 X0 X1) \Rightarrow ((v10_functor0 X2 X0 X1) \wedge (v13_functor0 \\ & X2 X0 X1)))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2. (m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1)))
\end{aligned} \tag{10}$$

Theorem 1

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0))))) \Rightarrow (\forall X1. ((\\
& \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\
& X1) \wedge (l2_altcat_1 X1))))) \Rightarrow (\forall X2. ((v15_functor0 X2 X0 X1) \wedge \\
& (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X4. (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow ((r2_altcat_3 \\
& X0 X3 X4) \Rightarrow (r2_altcat_3 X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 \\
& X0 X1 X2 X4))))))
\end{aligned}$$